Modular Open Systems Approach Review Team (MOSART)

LTC (P) Ken Flowers
Director, Open Systems Joint Task Force

27 February 2004

Open Systems
OS
Joint Task Force

A Real-World MOSA Success Story

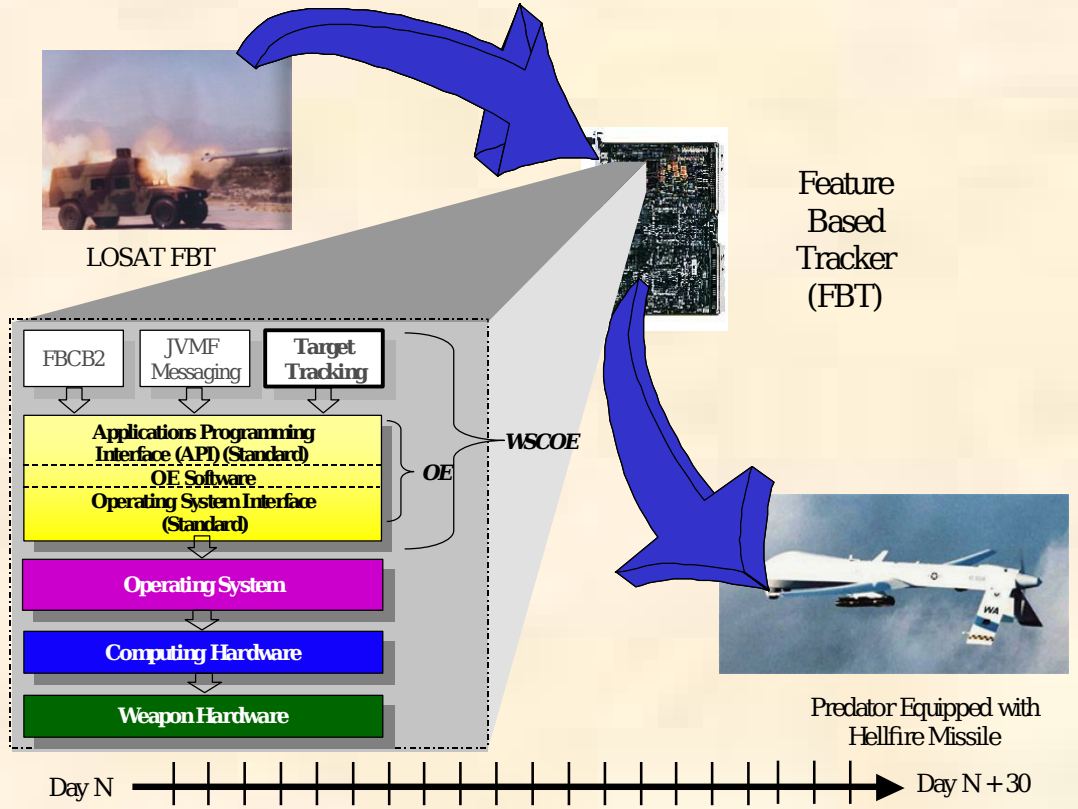
- What
  - Predator UAV was augmented with Hellfire missile in just over 30 days for rapid deployment in Afghanistan.
- How
  - Critical target tracking software was easily rehosted from LOSAT (Line of Sight Anti-Tank) computing environment to Predator's because it was built upon the Army's open Weapon System COE API.
  - The WSTAWG COE specifies common services for managing the 1553 bus and for handling digital video.

Resulted in:

- A New Capability - fielded in rapid time
- Significant Cost Avoidance - 75% of typical software development costs
- Enhanced Interoperability - by re-using a proved weapon systems product

Enabled by MOSA using:

- Modular Design
- Key Interfaces
- Open Standards



Today's Agenda

9:00-9:15	LTC Flowers	Introductions
9:15-9:30	Dr. Garber	Opening Remarks
9:30-9:35	LTC Flowers	Goals
9:35-9:50	LTC Flowers	MOSA Implementation Policy Memo
10:00-10:10	LTC Flowers	MOSART Role
10:10-10:25	LtCol Telford	Define MOSA and Key Concepts
10:25-10:40		Break
10:40-11:00	CAPT Strei, PEO (IWS)	Navy Open Architecture Approach
11:00-11:30		Other Perspectives/Approaches
11:30-11:45	LTC Flowers	Proposed Way Forward
11:45-12:00		Review Action Items/Plans for Next Meeting

Admin

- OSJTF contact number: 703-602-0851 x159
- Restrooms: Rear Hallway
- Meeting notes will be emailed per attendee list

Opening Remarks

Dr. Garber

Director, Systems & Mission Integration

(OUSD AT&L DS/SMI)

Open Systems
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Joint Capability for our Forces (Implementing MOSA)

- **Roadmaps with Open Systems Architecture as a foundation**
- **Capability Area DABs**
  - **Joint Battle Management Command & Control (JBMC2)**
  - **Joint Integrated Air & Missile Defense (JIAMD)**
- **System DAB Reviews in Context**
  - **Fed by OIPTs & MOSA**
- **Joint Integrated Warfighting Systems Council**

Modular Open Systems Approach (MOSA) and Joint Integrated Warfare

DAE MOSA Guidance

"*The OSJTF's modular, open systems approach is a* ***key enabler*** *in the Department's focus on* ***joint architectures*** *and* ***evolutionary approach*** *to weapon systems acquisition. All acquisition programs should employ a modular, open systems approach.*"

Source: PDUSD(AT&L) Memo on Extension of the OSJTF, 18 DEC 2002

And as Applied to Joint Integrated Warfare

"*I received a very encouraging briefing from the Navy dealing with warfare systems integration, and in particularly, the key role of open systems integrated architectures. ..... I would like to initiate an informal "Joint Integrated Warfare Systems Council" that would provide progress reports and receive guidance and support from Admiral Giambastiani, the JFCOM Commander, and myself, in the area of warfare systems and mission integration, in support of the "joint warfighter."*

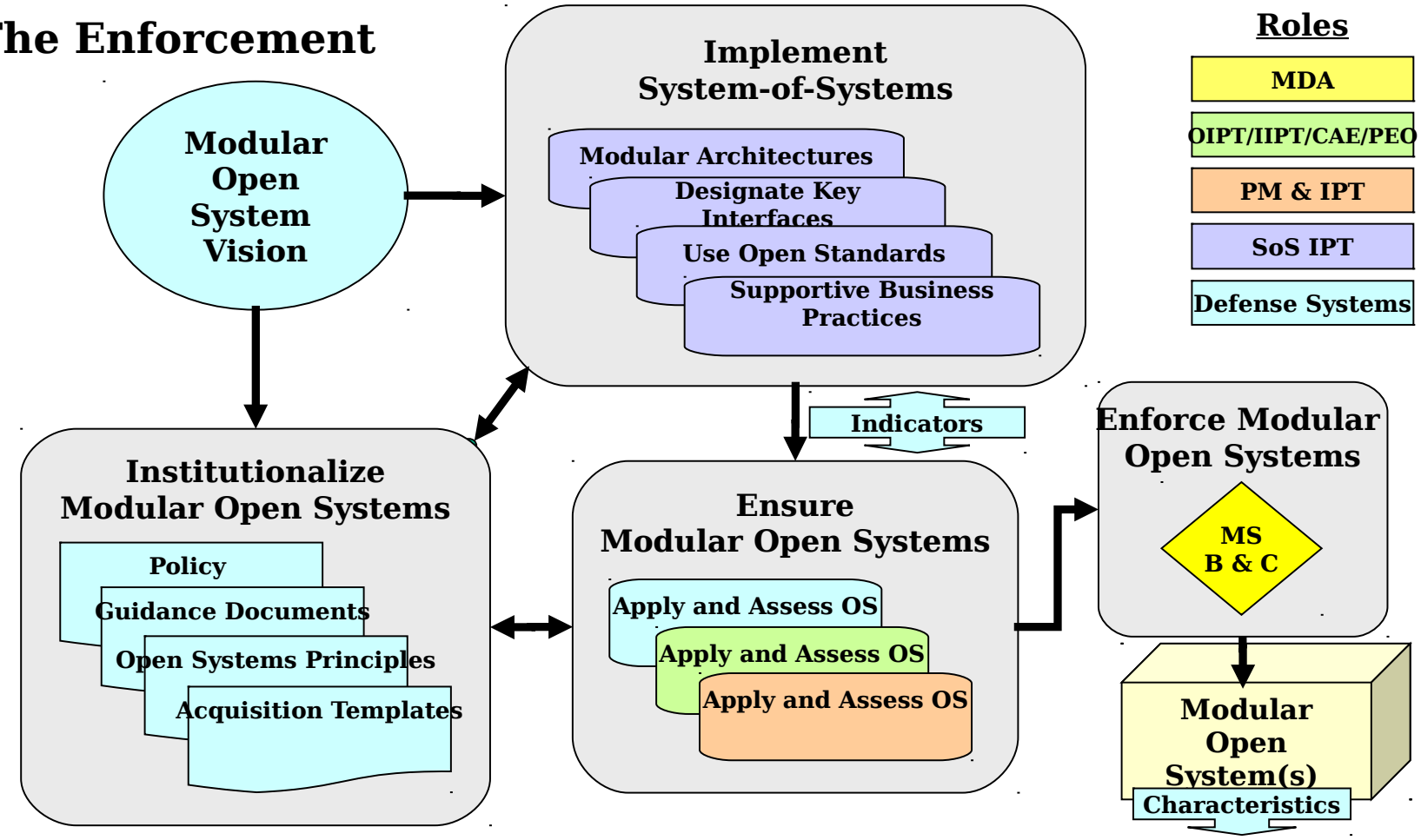
Source: USD(AT&L) message on Joint Integrated Warfare, 27 JAN 2004

MOSA Policy & Enforcement

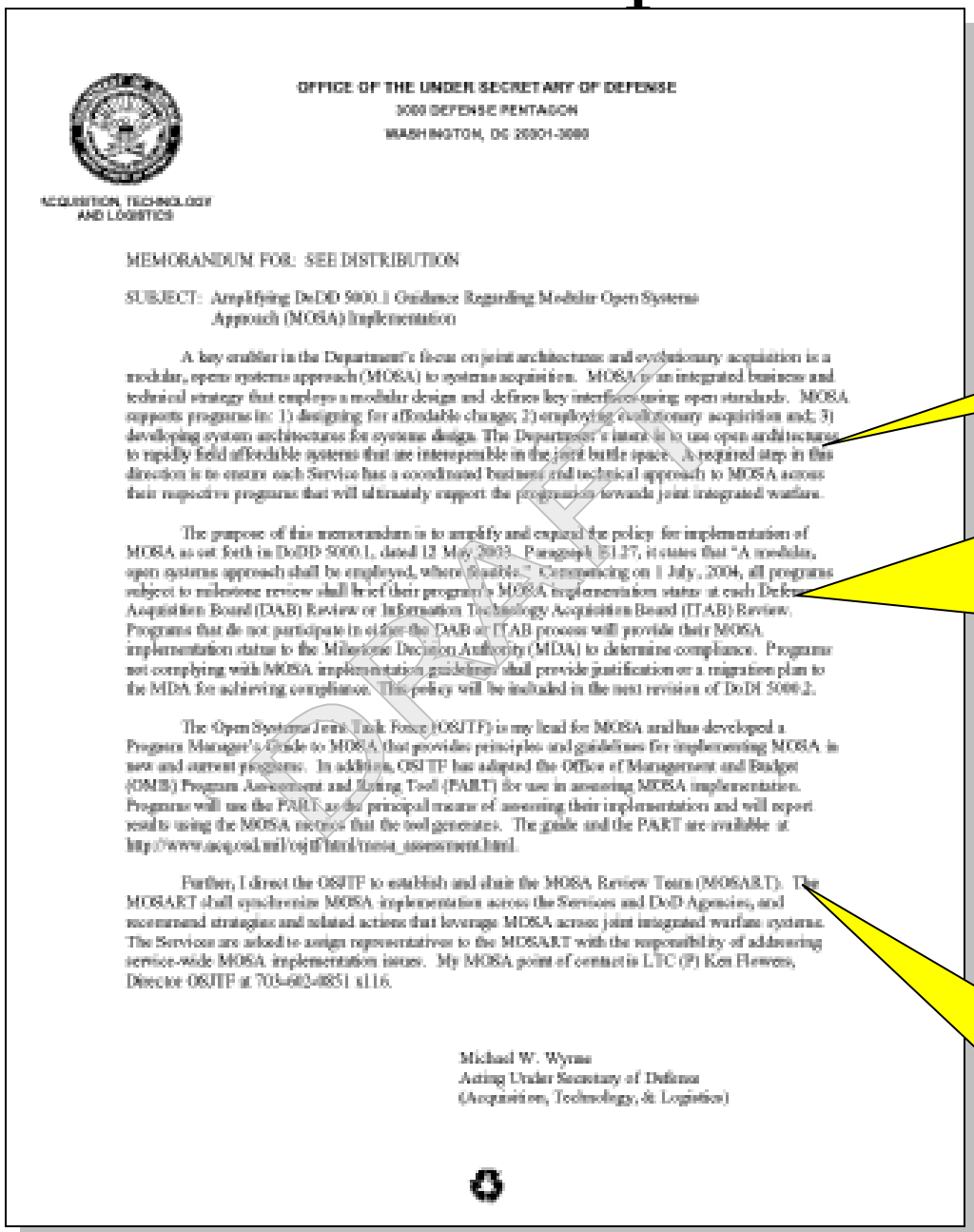
The Policy

E1.27. Systems Engineering. Acquisition programs shall be managed through the application of a systems engineering approach that optimizes total system performance and minimizes total ownership costs. A **modular, open-systems approach** shall be employed, where feasible. DODD 5000.1, 12 May 2003

The Enforcement



MOSA Implementation Memos



OFFICE OF THE UNDER SECRETARY OF DEFENSE
3000 DEFENSE PENTAGON
WASHINGTON, DC 20301-3000

ACQUISITION, TECHNOLOGY AND LOGISTICS

MEMORANDUM FOR: SEE DISTRIBUTION

SUBJECT: Amplifying DoDD 5000.1 Guidance Regarding Modular Open Systems Approach (MOSA) Implementation

A key enabler in the Department's focus on joint architectures and evolutionary acquisition is a modular, open systems approach (MOSA) to systems acquisition. MOSA is an integrated business and technical strategy that employs a modular design and defines key interfaces using open standards. MOSA supports programs in: 1) designing for affordable change; 2) employing evolutionary acquisition and; 3) developing system architectures for systems design. The Department's intent is to use open architectures to rapidly field affordable systems that are interoperable in the joint battle space. A required step in this direction is to ensure each Service has a coordinated business and technical approach to MOSA across their respective programs that will ultimately support the progression towards joint integrated warfare.

The purpose of this memorandum is to amplify and expand the policy for implementation of MOSA as set forth in DoDD 5000.1, dated 12 May 2003. Paragraph E1.27, it states that "A modular, open systems approach shall be employed, where feasible." Commencing on 1 July, 2004, all programs subject to milestone review shall brief their program's MOSA implementation status at each Defense Acquisition Board (DAB) Review or Information Technology Acquisition Board (ITAB) Review. Programs that do not participate in either the DAB or ITAB process will provide their MOSA implementation status to the Milestone Decision Authority (MDA) to determine compliance. Programs not complying with MOSA implementation guidelines shall provide justification or a migration plan to the MDA for achieving compliance. This policy will be included in the next revision of DoDI 5000.2.

The Open Systems Joint Task Force (OSJTF) is my lead for MOSA and has developed a Program Manager's Guide to MOSA that provides principles and guidelines for implementing MOSA in new and current programs. In addition, OSJTF has adapted the Office of Management and Budget (OMB) Program Assessment and Rating Tool (PART) for use in assessing MOSA implementation. Programs will use the PART as the principal means of assessing their implementation and will report results using the MOSA metrics that the tool generates. The guide and the PART are available at http://www.acq.osd.mil/osjtf/html/mosa_assessment.html.

Further, I direct the OSJTF to establish and chair the MOSA Review Team (MOSART). The MOSART shall synchronize MOSA implementation across the Services and DoD Agencies, and recommend strategies and related actions that leverage MOSA across joint integrated warfare systems. The Services are asked to assign representatives to the MOSART with the responsibility of addressing service-wide MOSA implementation issues. My MOSA point of contact is LTC (P) Ken Flowers, Director OSJTF at 703-602-0851 x116.

Michael W. Wynne
Acting Under Secretary of Defense
(Acquisition, Technology, & Logistics)

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"The MOSART shall synchronize MOSA implementation across the Services and DoD Agencies, and recommend strategies and related actions that leverage MOSA across to better integrate joint integrated warfare systems."

GOALS

- MOSART
  - Synchronize MOSA implementation across the Services and DoD Agencies,
  - Recommend strategies and related actions that leverage MOSA across joint integrated warfare systems
- Today's meeting
  - Establish working baseline
  - Points of Departure
    - NOA
    - SIAP
- Next meeting
  - Services & Agencies address their approaches / issues relative to implementing MOSA
  - Next MOSART: **~26 March 2004**

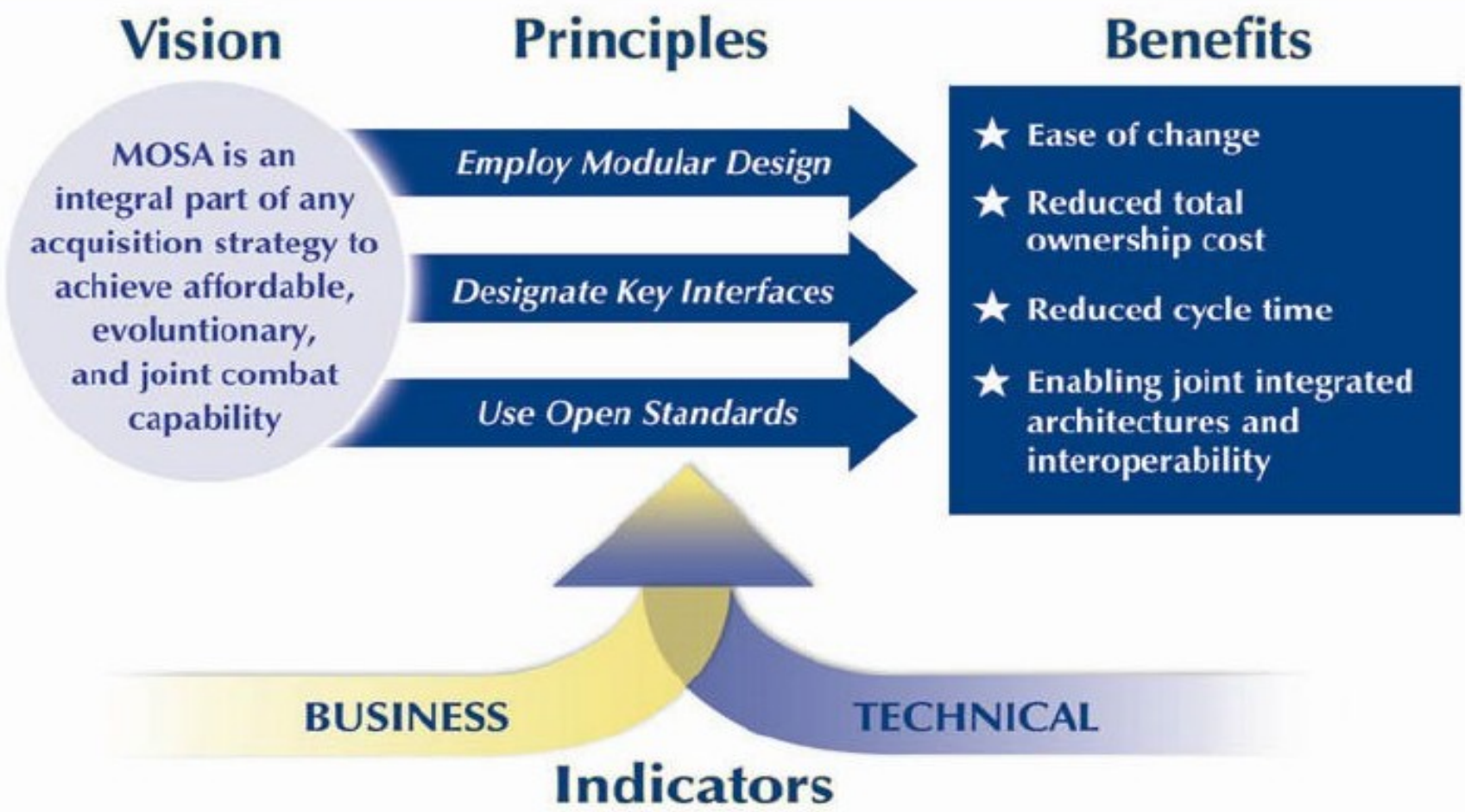
Proposed MOSART Role & Structure

- Proposed Mission Statement
  - Provide the way ahead for applying MOSA to joint warfare integration.
  - Elevate unresolved issues pertaining to the application of MOSA to achieve joint integration objectives.
  - Offer recommendations for consideration and potential adjudication.
  - Synchronize the Services' mgmt approach to MOSA implementation.
  - Align MOSA implementations across and within the Joint community.

- Members
  - Service architecture and integration reps
  - Agency / Program integrators
  - JFCOM, JS, & OSD
  - OSJTF (chair / facilitator)

- Related Activities
  - JIWSC
  - MOSA Workshops
    - Industry

Modular Open Systems Approach an Overview



Terms of Reference

1. **MOSA** – An integrated business and technical strategy that employs a modular design and, where appropriate, defines key interfaces using widely supported, consensus-based standards that are published and maintained by a recognized industry standards organization.

2. **Key Interfaces** – An interface for which the preferred implementation uses an open standard to design the system for affordable change, ease of integration, interoperability, commonality, reuse and other essential considerations such as criticality of function.

3. **Open Standards** – Standards that are widely used, consensus-based, published and maintained by recognized industry standards organizations.

4. **Integrated Architectures** – An architecture consisting of multiple views or perspectives (operational view, systems view and technical view) that facilitates integration and promotes interoperability across family of systems and systems of systems and compatibility among related architectures. [CJCS 3170.01c]

Terms of Reference – *Cont.*

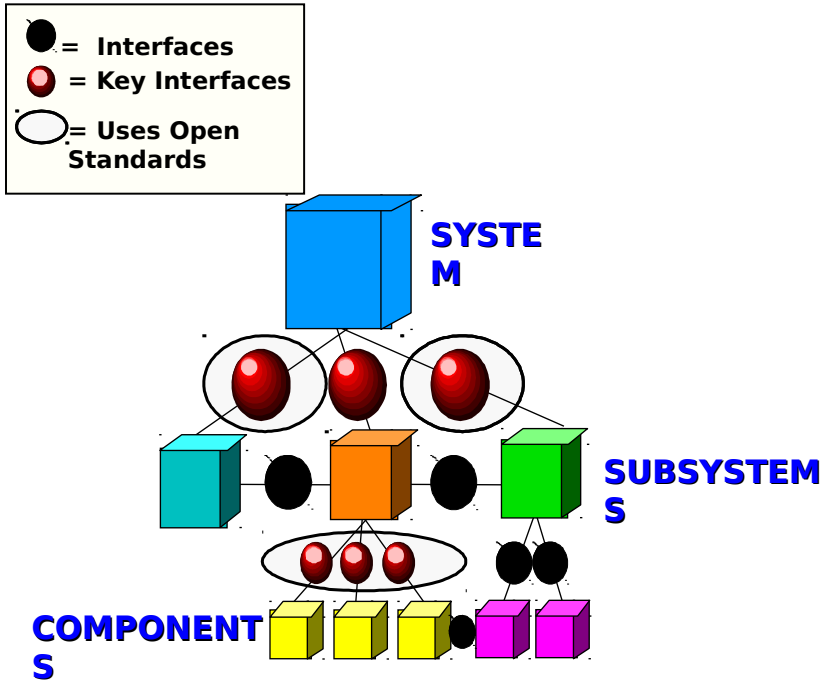
5. **Interoperability –** The ability of systems, units, or forces to provide data, information, materiel, and services to and accept the same from other systems, units, or forces, and to use the data, information, materiel, and services so exchanged to enable them to operate effectively together. (DoDD 5000.1)

6. **Integration -** The process of aligning missions, resources, functions, processes, architectures, and performance to create a cohesive warfighting system and a highly capable force.

7. **Joint Integrated Warfare –** The collaborative efforts to unify missions, connect architectures, and standardize key interfaces within warfighting systems.

8. **Open Systems –** A system that employs modular architecture and uses widely-supported and consensus based standards for its key interfaces.

MOSA Principles



Three Major Principles:

- **Employ Modular Design**
- **Designate Key Interfaces**
- **Use Open Standards**

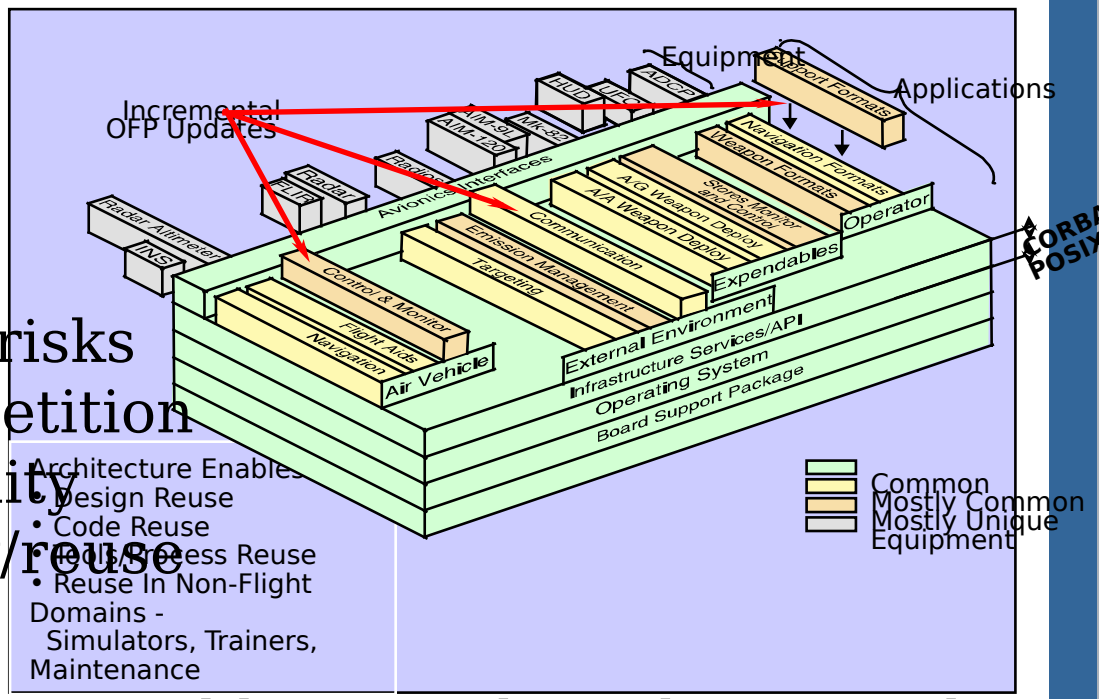
Complete Systems Architecture Is the key to the successful Application of MOSA Principles!

MOSA Enables DoD to Deliver Affordable, Joint 21st Century Combat Capabilities

Modular Design Benefits

Warfighter Benefits:

- Reduces fielding times
- Reduces upgrade costs
- Reduces obsolescence risks
- Increases vendor competition
- Promotes Interoperability
- Enhances commonality/reuse



An Architecture-based Approach

Bottomline: Gets tools to warfighters faster and c

What an Open System is…… and is not?

- ***IS***

  A system that employs modular architecture and uses w
  supported and consensus based standards for its key in

- **IT ENABLES *BUT IS NOT* NECESSARILY EQUAL TO:**

  - Commonality

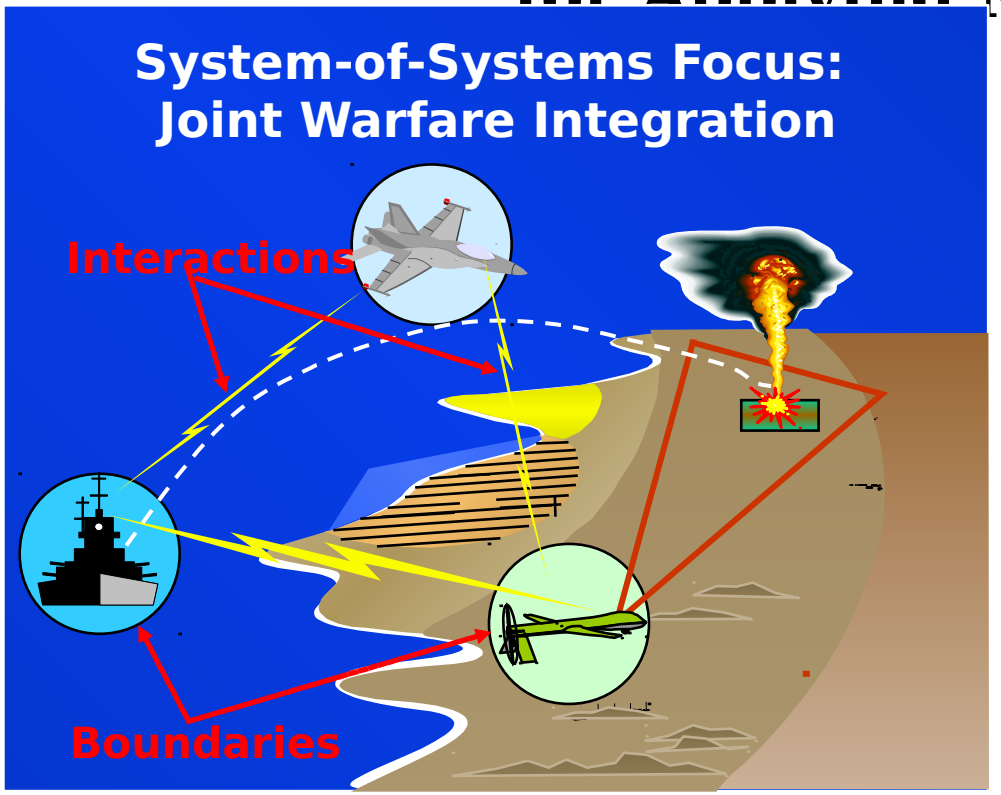
  - COTS

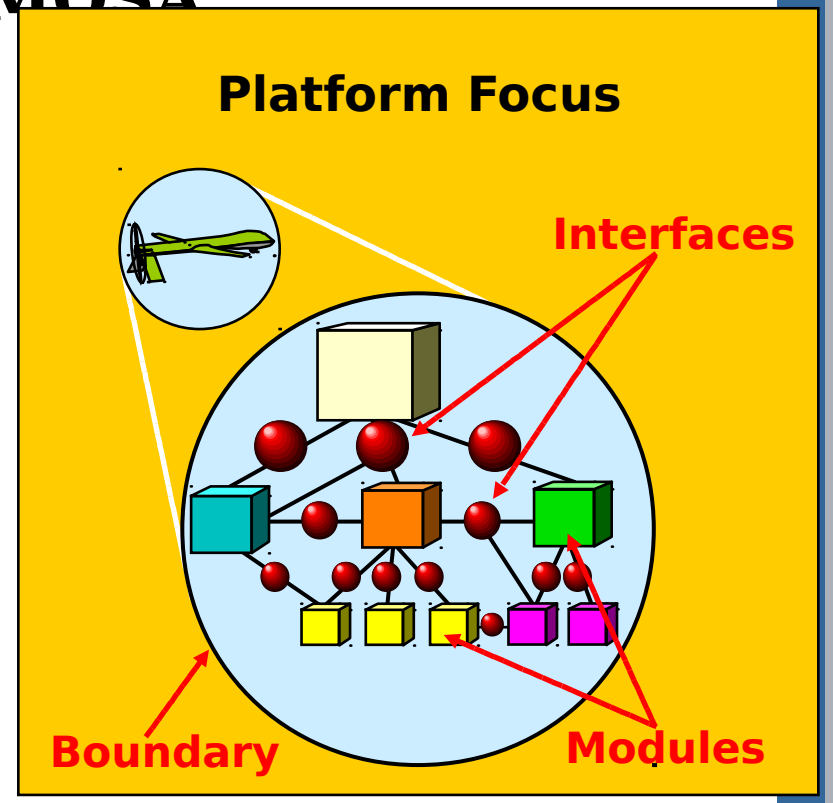
  - F_3 I (Form, Fit, Function and Interface)

  - Interoperability

  - Open Source

Two Predominant Perspectives for Applying MOSA





System-of-Systems typically:

- Are hard to visualize and bound,
- Are dynamic and often literally 'assembled on-the-fly' by operational commanders
- Have a relatively short lifecycle when compared to traditional systems that remain 'intact' for extended periods of time, and
- Are usually not managed or funded under a singular or consolidated authority.

Traditional Systems typically:

- Have long life
- Are managed by a single program manager and regulated by a robust acquisition process, and
- Are well understood by your major system integrators who have successfully built them.

Navy Open Architecture

- NOA brf.ppt

The Way Ahead…..

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Action Items

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